REPORT NO. 83-2-8
ALEXANDRIA FIELD OFFICE

3430
DECEMBER 1982

Gen

PRELIMINARY EVALUATION OF CONTROL ALTERNATIVES FOR THE TEXAS LEAFCUTTING ANT

by

Wesley A. Nettleton[1/], R. Kenneth Jeane[2/]
and Huey N. Wallace[3/]

INTRODUCTION

The Texas leafcutting ant, Atta texana (Buckley), is a serious pest of pine regeneration in the upland areas of west central Louisiana and east Texas. The ants remove needles and buds from natural and newly planted pine seedlings of all species during the winter and early spring when other green material is unavailable. They use this foliage to culture a fungus garden in underground cavities; the fungus is used as a food source. In areas where these ants are abundant, it is impossible to establish pine regeneration without ant eradication.

The economic importance of the Texas leafcutting ant to forestry was not recognized until the mid 1930's when large scale pine regeneration efforts were initiated in Louisiana. Control experiments were conducted from 1935 to 1937 by the Bureau of Entomology and Plant Quarantine. It was found that carbon disulfide was an effective fumigant. However, this material was inflammable and explosive, so further testing continued. In the early 1940's methyl bromide fumigation was found to have good efficacy and was cheaper and safer to apply than carbon disulfide (Johnston 1944).

In the early 1960's, tests to find a practical method of control for the red imported fire ant, Solenopsis invicta Buren, led to identification of a pelleted bait containing the insecticide mirex (Lofgren et al. 1962). Echols (1966) found that by slightly modifying this bait, using citrus pulp as a carrier, it was both attractive to and gave excellent control of the Texas leafcutting ant. Therefore, mirex bait was used exclusively through the mid 1960's until 1978 for treatment. At that time the EPA banned mirex due to its persistance in the environment and possible carcinogenicity.

1/ Entomologist, Southern Region, State and Private Forestry, Forest Pest Management, Pineville, LA 71360.

2/ Staff Forester, Insect & Disease, Louisiana Department of Natural Resources, Office of Forestry, Woodworth, LA 71485.

3/ Biological Technician, Southern Region, State and Private Forestry, Forest Pest Management, Pineville, LA 71360.

Since that time foresters have had to again rely on methyl bromide for A. texana control. Due to this fumigant's high toxicity difficulty of application, and limited time period of application (Nettleton in press), there is a definite need to identify alternative control methods. Recently, USDA scientists at Gainesville, FL, have evaluated over 5,000 chemicals incorporated into baits for red imported fire ant control (Williams et al. 1980). This has led to the identification of an effective delayed action toxicant bait, an aminohydrazone insecticide, available commercially under the trade name of Amdro®[4/].

During the spring 1982, the Louisiana Office of Forestry and the Forest Pest Management, Alexandria, LA, Field Office conducted a preliminary field evaluation of Amdro fire ant insecticide and Amdro leafcutting ant bait obtained from American Cyanamid Company to test their suitability for control of the Texas leafcutting ant. This report summarizes the results.

METHOD OF EVALUATION

Nine Texas leafcutting ant nests were selected on the Evangeline Ranger District of the Kisatchie National Forest south of Alexandria, LA. Rates of 1 lb/acre and 5 lb/acre of both Amdro fire ant insecticide and Amdro leafcutting ant bait (a formulation using citrus pulp as carrier) were applied to 2 nests each. Also, 1 nest was treated with 2 lb/acre Amdro leafcutting ant bait. The size of treatment area for each nest was determined by locating the outermost feeder holes from the main nest and estimating the area covered. The baits were then broadcast over the entire area. The treatment was made on April 7, 1982, and posttreatment checks were made at 3, 7, and 12 week intervals. Nests were judged to be active by presence of foraging or nest excavation.

RESULTS AND DISCUSSION

The Amdro fire ant insecticide was ineffective at both rates (table 1). This was not surprising as the carrier -- soybean oil sprayed on defatted corn grits -- is not as attractive as the citrus pulp.

The leafcutting ant bait only showed potential at the higher rates. It killed 1 nest at the 5 lb/acre rate and reduced activity in the other. It also killed the nest at 2 lb/acre.

This was only a preliminary test designed simply to determine whether Amdro demonstrated efficacy in a natural situation. The data obtained in this trial provide evidence that Amdro does have promise as a toxicant bait for Texas leafcutting ant control and further testing at a wider variety of rates would be warranted.

[4/] Mention of commercial products in this paper does not constitute endorsement by the U.S. Department of Agriculture to the exclusion of other products that may be suitable.

Table 1. Preliminary evaluation of Amdro® fire ant bait and Amdro® leafcutting ant bait for the control of the Texas leafcutting ant (Rapides Parish LA)

Treatment	Rate	Nest Size (acres)	Condition of Nest 3 weeks	7 weeks	12 weeks
Fire ant bait	1 lb/ac	0.5	Active	Active	Active
Fire ant bait	1 lb/ac	0.5	Active	Active	Active
Fire ant bait	5 lb/ac	0.5	Active	Active	Active
Fire ant bait	5 lb/ac	1.0	Active	Active	Active
Leafcutting ant bait	1 lb/ac	0.5	Active	Active	Active
Leafcutting ant bait	1 lb/ac	0.5	Active	Active	Active
Leafcutting ant bait	2 lb/ac	0.5	Active	Inactive	Dead
Leafcutting ant bait	5 lb/ac	0.5	Reduced activity	Reduced activity	Reduced activity
Leafcutting ant bait	5 lb/ac	1.0	Reduced activity	Inactive	Dead

REFERENCES

Echols, H. W. Texas leaf-cutting ant controlled with pelleted mirex bait. J. Econ. Entomol. 59:628-631; 1966.

Johnston, H. R. Control of the Texas leaf-cutting ant with methyl bromide. J. Forest. 42:130-133; 1944.

Lofgren, C. E.; Stringer, C. E.; Bartlett, F. J. Imported fire ant bait studies: GC-1283, a promising toxicant. J. Econ. Entomol. 55:405-407; 1962.

Nettleton,, W. A. U.S. Department of Agriculture Forest Service guidelines for the control of the Texas leafcutting ant with methyl bromide. Unpublished draft of report. 1982.

Williams, D. F.; Lofgren, C. S.; Banks, W. A.; Stringer, C. E.; Plumley, J. K. Laboratory studies with nine amidinohydrazones, a promising new class of bait toxicants for control of red imported fire ants. J. Econ. Entomol. 73:798-802; 1980.